

Space News **ROUNDDUP!**

VOL. 3 NO. 10

MANNED SPACECRAFT CENTER, HOUSTON, TEXAS

MARCH 4, 1964

Dr. Gilruth Initiates MSC Cost Reduction Program

MOVE SET FOR NEXT WEDNESDAY

Life Systems Laboratory Accepted For Occupancy

The NASA Manned Spacecraft Center has accepted the Life Systems Laboratory at the Clear Lake site and certified it as ready for occupancy. Carrying a \$892,266 price tag, the structure will house personnel for the Crew Systems Division. Moving day is March 11, 1964.

The Life Systems Laboratory contains more than 39,000 square feet of space. It is 245 feet long by 105 feet wide and has a 47-foot high bay area running the length of the building.

A space environmental simulator occupies one end of the high bay area. Included also are several drop towers now being acquired.

Surrounding these test facilities are the following laboratories necessary for their operations:

The Space Suit Laboratories where work on operational suit projects and advanced space suit projects will be done. The operational unit will directly support all manned tests

performed in the laboratory, while the advanced unit will investigate development concepts.

The Environmental Systems Instrumentation Laboratory will test payload instrumentation.

The Chemistry Laboratories are partially completed.

The Materials and Survival Equipment Laboratory where prototype and flight survival equipment will be fabricated and tested.

The Restraint Laboratory where new couch concepts will be developed and human tolerance levels tested.

The systems laboratory is the ninth building accepted

(Continued on page 3)

In line with President Johnson's request for increased emphasis on economy in government, Dr. Robert R. Gilruth, director, Manned Spacecraft Center has initiated a cost reduction program which will save \$2 million in operating costs on the FY 64 Budget at the Center.

The actual program was set in motion early last month when Dr. Gilruth appointed Charles F. Bingham, chief, Management Analysis Division, as the Cost Reduction Officer to administer the MSC Program.

General objective of the program is to reduce overall costs at the Center while maintaining maximum quality and reliability.

This includes reducing the cost of support and ad-

ministrative operations, specifying only what is needed for any job or program, obtaining needs at the lowest realistic cost, educating employees in cost consciousness and cost control techniques, and increasing and improving applications of cost reduction techniques.

To make the cost reduction program work, Dr. Gilruth stated that an important part of the job of every line supervisor and staff officer is to perform his responsibility in the

most economical manner possible, consistent with

(Continued on page 3)

Open Hours Of Site Gates Announced

The MSC Security Division announced this week that effective next Monday, the three entry gates at the Clear Lake site will be open from 7 a.m. to 6 p.m. on all regular working days.

Any of the three street gates may be used by employees and other personnel whose vehicles have been decaled or for which car passes have been issued.

After 6 p.m. on working days and on holidays and on weekends the Second Street Gate will be open, with all other entry and exit points to the Site closed. The Second Street Gate will remain open 24 hours a day.

Visitor reception facilities will be located at the Second Street Gate and all visitors will be directed to, and processed through this gate.

Delivery and Service vehicles will use the Avenue "B" Gate at the eastern end of the Site.

Site One Badge System Set By Security Division

All visitors to the Clear Lake site must be identified by a visitor's badge beginning March 9, it was announced this week by the MSC Security Division.

Controlled entry to the Site will be necessary in the interests of protecting government property and classified information as well as assuring the expeditious conduct of government business.

Visitors will be issued either a permanent or temporary badge, depending upon the frequency of their visits. All badges for visitors as well as employees are coded with a color strip

as follows: green (secret); yellow (confidential); and red (no clearance).

The Security Division requests that all persons wear their badges while on MSC facilities. MSC employees are urged by Security to challenge all unidentified visitors and to contact the Security Division on questions of identity, clearances or other visitor control matters.

Christopher Kraft Receives Arthur S. Flemming Award

MSC's Christopher C. Kraft Jr., assistant director for Flight Operations was honored last month when he was presented the annual Arthur S. Flemming award as one of the ten out-

performance and enhancing appreciation of government service, was established by the Downtown Chapter of the District Junior Chamber of Commerce.

Kraft received his award at a luncheon February 12, at the Statler Hilton Hotel in Washington, D. C. The main speech for the occasion was delivered by Undersecretary of Commerce Franklin D. Roosevelt Jr.

The esteem in which the award and its recipients are held was evidenced by the large number of high government and civic officials who watched the ceremonies.

President Johnson greeted the men in a letter, telling them that "all America is proud" of your accomplishments.

Kraft was active in establishing many of the basic concepts of the Project Mercury operation. He was one of the original group which formed the Space

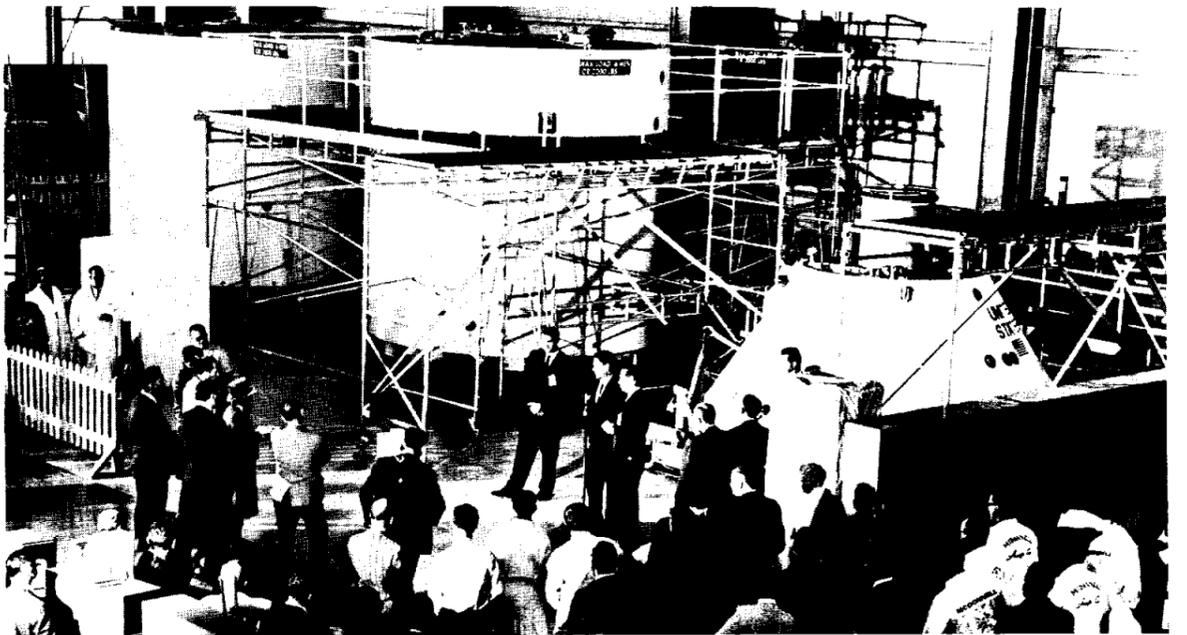
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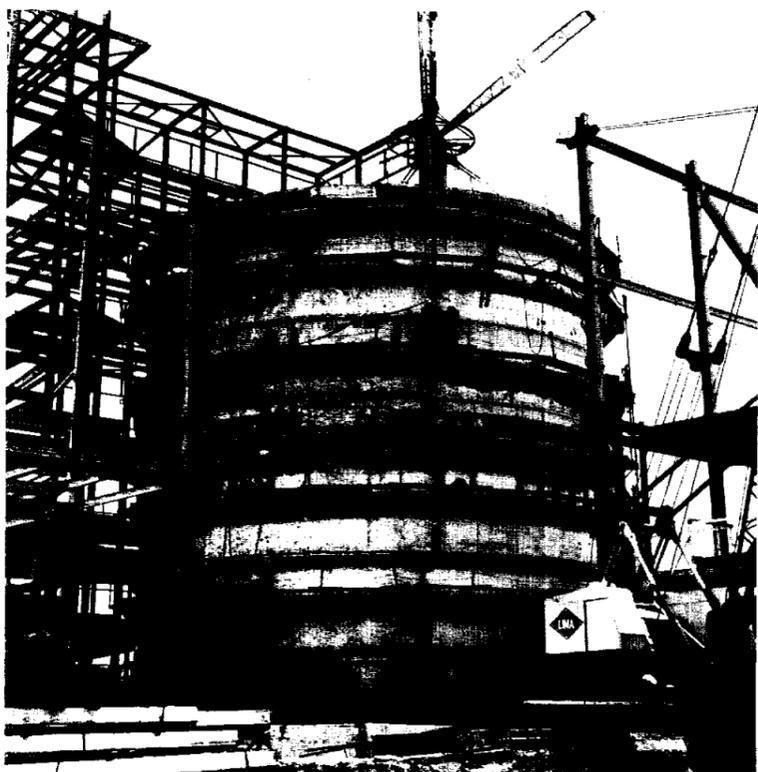
CHRISTOPHER C. KRAFT JR.

standing young men in government career service.

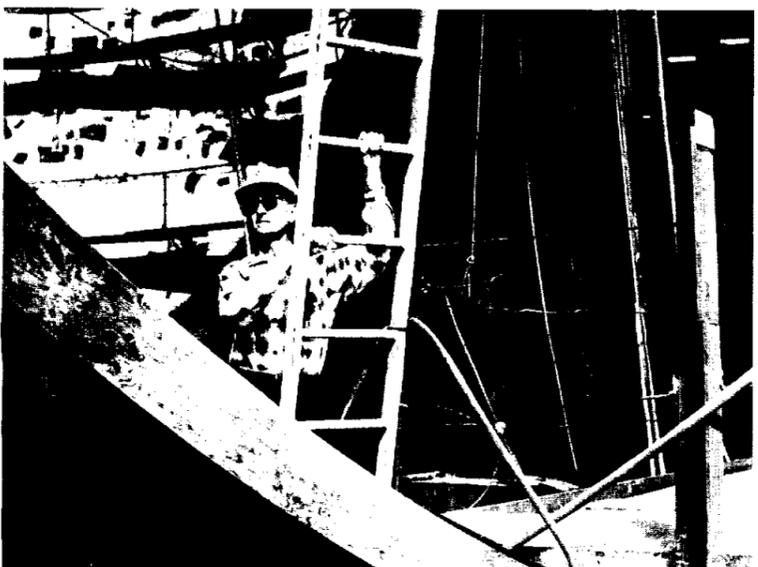
The program, aimed at recognizing exceptionally meritorious work, encouraging high standards of



APOLLO BP-13 - Shown in Hangar A-F at Cape Kennedy at a press showing with Merritt Preston, manager, MSC Florida Operations at mike answering questions, are (l. to r.) the Apollo Adapter section, Service Module and Command Module. The three sections were air lifted to Cape Kennedy last month from North American Aviation, Space and Information Systems Division plant in Downey, Calif. They will be checked out, mated with a Saturn I launch vehicle in preparation for the SA-6 flight now scheduled for April.



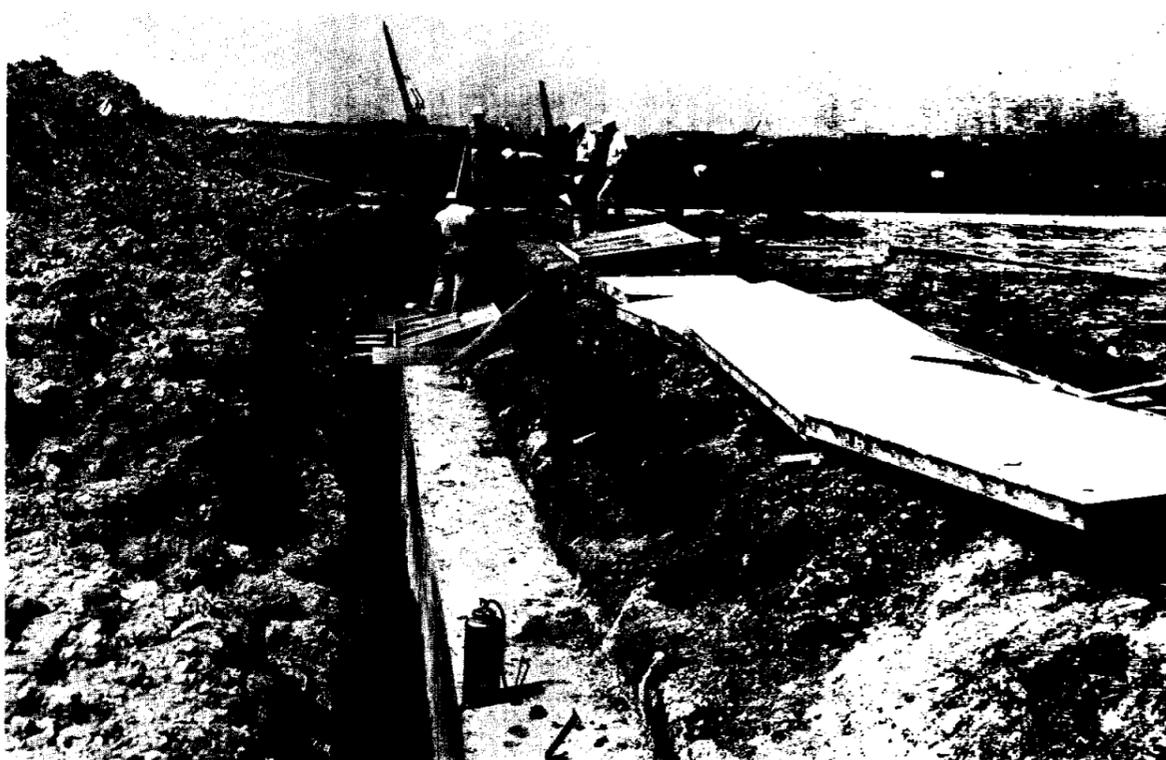
HIGH ON CHAMBER A., Inspectors J. L. Bartman and W. M. Radcliff examine a weld seam. Specialists in their field, these men use X-ray equipment and a mass spectrometer to inspect the welding on these vessels.



INSPECTOR J. L. Bartman emerges from Chamber A at the Space Environment Simulation Lab. Framework in the foreground protects the finish on the doorway which was put into place in January.



STRUCTURAL STEEL FRAMEWORK - Inspectors J. L. Steckles and B. W. Perry watch "red iron" being lifted into place on the Space Environment Simulation Lab.



IN THE BEGINNING - During Phase I of the site construction, J. G. Putman (facing camera) was Project Engineer and supervised field construction work. He is now chief, Structural Group A.

Corps Of Engineers Supervise

(EDITOR'S NOTE: The following article was written for the Roundup by Ron Skaggs of the Corps of Engineers.)

The work of the Army's Corps of Engineers at the Manned Spacecraft Center may not be generally known to NASA employees, but this agency has been supervising the design and construction of the project since its inception.

The Fort Worth District Office was given the responsibility for assembling a well-coordinated supervisory group to supplement available forces within the Fort Worth District. Experienced engineers; civil, mechanical, electrical, inspectors, and administrative personnel were summoned from missile sites throughout the Western United States, air bases in the New England and Southern States, and various projects around the Nation. NASA personnel who have worked with the Corps have praised the Engineers for their efficient operation.

On-board supervision of engineering designs and building documents started over two years ago when the Corps set up a Project Engineering Office at Brown & Root, Inc. Sam Martin had the initial responsibility for this office, and he was assisted by Jack Sheeler. Bob Jones later succeeded Martin, and he now heads a staff of 33 engineers, draftsmen, and clerical workers located in Bldg. 222 at Ellington Air Force Base.

Lt. Col. Wayne A. Blair, a civil engineer graduate from The Citadel who had recently completed a tour of duty as commander, 11th Engineer Combat Battalion in Korea, arrived in January 1962 to be the deputy district engineer and area engineer in charge of the

project. Colonel Blair set up temporary headquarters in the Farnsworth-Chambers Building and later moved the area office to the Peachy Building and on to Ellington in October 1962, along with the Engineering Division personnel.

Don Mills assumed the duties of resident engineer in charge of construction in early February 1962. The resident office staff was temporarily housed in an Air Force building at Ellington but later moved to a field office at Clear Lake. The Construction Division now numbers approximately 64 employees, which includes field supervisory engineers, inspection personnel, soils lab technicians, office engineers, and administrative staff members.

The first contract bid opening for work at the Clear Lake Site was held on March 15, 1962, and the low bidder Morrison-

Knudsen & Hardeman, was given the Contract "NASA-1" on the 29th. This contract included Site preparation, such as drainage facilities, canal relocation, bridges, roads, tunnels, and utilities, and the water storage facilities and wells; actual work started on April 2.

While these operations were underway, a contract for various support utilities was let in September 1962. This contract included a central heating-cooling plant, fire station, and water and sewage treatment facilities. It also included the Central Data Office Building, which was recently occupied by NASA personnel.

The fire station was the first building turned over to NASA. The next facilities to be completed and accepted by NASA were the Support Office and the Warehouse. The latter were a part of the largest



MILLING DOORWAY - Inspector W. M. Radcliff, center, watches the Chicago Bridge & Iron milling machine make a cut on the O-ring for the door to Chamber A. This machine has milled the surface of the doorway and the O-ring to a .005 inch tolerance.

The Spotlight On MSC Secretaries....

MARION LOVELESS (top left) is secretary to Joseph N. Kotanchik, chief of the Structures and Mechanics Division. Marion was born in Witt, Ill., where she graduated from Witt Community High School. She attended Missouri Business College in St. Louis. Prior to joining NASA in January 1962, Marion spent four years as a branch secretary at the Los Alamos Scientific Laboratory, Los Alamos, N. M., and also worked for the Dow Chemical Company, Granite City, Ill. Her husband, Henry L. Loveless, is a law enforcement officer with the U.S. Treasury Department stationed in Houston. They have four children - Bill 19, with the Army in Germany; David 16; Linae 7; and Lisa Ann 5. Marion lists her family,

cards and reading as her main interests.

MILDRED ROGERS (lower left) is secretary to John R. Brinkman, chief, Photographic Division. Mildred was born in Simpson, Ill., and was graduated from United Township High School in East Moline, Ill. She joined NASA in May, 1962 after two years as secretary at the Texas Institute for Rehabilitation and Research in Houston. Earlier jobs included managing a canteen in a Veterans Administration hospital, managing the sportswear department of a store and illustration work for the U.S. Government during World War II. She and her daughters, Jacqueline 18, and Carlotta 16, live in Kemah. Mildred teaches the kindergarten class at her church in League City, and is active in

P.T.A. work. "I love to travel" says Mildred. "I've seen 38 of our 50 wonderful states. The girls and I just jump in the car and away we go. We have also been to Canada and Mexico. I love to draw and paint and I enjoy all sports, either as a spectator or as a participant."

IMOGENE McDONALD (Upper right) secretary to Edwin Samfield, chief of the Engineering Division, joined NASA in August, 1962, as a secretary in the Mercury Project Office. She was born in Princeton, Tex., where she graduated from Princeton High School. She attended East Texas State Teachers College, Commerce, Tex. Imogene's husband Bobby G. McDonald, is sales manager for Millico Oil Tools, Inc., Houston. They have a son, Tommy 10. Prior to joining NASA, Imogene worked as a medical secretary at the Veterans Administration Hospital in Houston and at Baylor University Hospital, Dallas. She was also employed as secretary by the Atlantic Oil Company, Dallas. Imogene's hobbies include traveling, reading, bowling and the theater.

LEONA F. GERMANY (lower right,) secretary to Jack A. Kinzler, chief of Technical Services Division, has been with NASA since December of 1962. She was born in Nixon, Tex., and attended Brackenridge High School and Milam Secretarial College in San Antonio. Before joining NASA, Leona was with the National Bank of Commerce and J. S. Bache Company in San Antonio, National Headquarters of the American Red Cross in Washington, and the Presbyterian Church of the Covenant in Houston. Her daughter, Nancy 20, is a student at Sam Houston State College, Huntsville, Tex., and her son Billy 16, is a student at Milby Senior High in Houston. Leona says she enjoys square dancing, fishing, golfing, bridge and church related activities.



EAA Sponsors 'Wizard Of Oz' Show For Kids

The MSC Employees Activities Association has made arrangements for MSC employees children (ages 6-12) to see a local theater production of "The Wizard of Oz," Saturday, March 12.

The EAA will furnish tickets and transportation for 50 cents per child. A limit of 100 children has been set so parents are urged to make reservations early with any EAA district representative.

Children will meet at the Lane Wells Bldg. (Site 4) at 1:45 p. m. and will be returned there by 5 p. m. For additional information contact Ann Spencer at Site 8, by calling HU 3-7621.

MSC BOWLING ROUNDUP

MSC COUPLES LEAGUE
Standings as of Feb. 18.

Team	Won	Lost
Lame Ducks	12	4
Ridgerunners	11	5
Goofballs	10	6
Hackers	8½	7½
Schplitz	8	8
Piddlers	7	9
Shucks	7	9
Four Aces	6½	9½
Bowlernauts	5	7
Spare-O's	5	7

MSC MEN'S LEAGUE
Standings as of Feb. 20.

Team	Won	Lost
Lunar Lights	17	3
Pseudonauts	16	4
Turkeys	13	7
Spastics	12	8
Fizzlers	9	11
Overshoots	9	11
Tecnics	8	12
Cosmonuts	7	13
Asteroids	6	14
Whirlwinds	3	17

MSC MIXED LEAGUE
Standings as of Feb. 25.

Team	Won	Lost
Alley Oops	65	27
Eight Balls	-	-
Celestials	55	37
Five Flushers	52½	39½
Snapshots	52½	39½
Pricers	46½	45½
Little Splits	46½	45½
Virginians	46	46
Space Mates	45	47
Aborts	42	50
Hardley Ables	39½	52½
Core Dumps	36	56
Decigones	-	-
Gabs	28	64

CALENDAR OF EVENTS

MARCH 9 - NASA Sportsmen Association, 7 p. m., Bldg. 105, EAFB.

MARCH 10 - Party Bridge, 7:15 p. m., EAFB Officer's Open Mess.

MARCH 12 - "Wizard of Oz" for MSC children, meet at Lane Wells Bldg. 1:45 p. m.

MARCH 24 - Duplicate Bridge, 7:15 p. m., EAFB Officer's Open Mess.

PERSONNEL NOTES:

(EDITORS NOTE: The messages in this column are being presented by the MSC Personnel Office.)

MERIT PROMOTIONS

Since Jan. 1, 1959, the Civil Service Commission has required that all promotions in the Federal civil service be made under agency promotion programs that conform to guidelines established under the Federal Merit Promotion Program.

There is a saying that the best promotion program ever devised will be criticized by several employees for every one who lauds it--it will be a "good" program to the one who gets promoted and a "bad" one to those who are not selected. The Federal Merit Promotion program is no exception. It has not resulted in more promotions nor guaranteed advancement for everyone; it has resulted in more employees being considered for promotion and helped to assure that selections are made on the basis of merit and fairness to all.

The purpose of the Federal Merit Promotion Program is not to reward workers for long and faithful service. Rather, it is to help management select the best talent in the ranks of the career service to meet the many challenging problems facing the Nation and to assure that selections are made on a fair and equitable basis.

Because of the size, complexity, and dispersion of the Federal work force--over two million people employed in almost every kind of work in 80 agencies and thousands of field installations throughout the country and overseas--the Commission does not require agency promotion systems to be uniform. In fact, an agency may have several plans for different kinds of jobs and locations. One may require passing a written test while another may rely primarily on supervisory or group appraisals of employees being considered for promotion. Each agency has authority to establish the plan or plans best suited to its needs--but the plans must incorporate certain merit principles and conform to CSC guidelines.

In addition to the requirement that all promotions be made on the basis of merit from among the best qualified employees, agency promotion plans must satisfy the Commission that the following criteria are met under its guidelines and instructions---

Consultation -- Agencies must have consulted employees in the development and installation of their promotion plans. Changes in plans are also subject to consultation.

Information -- Employees must be fully informed of the policies and procedures governing their agency's promotion program. They must be able to find out readily how they are personally affected by their agency's plans, and the system must be operated so that employees are kept informed as to how the promotion procedures are carried out.

Consideration--Areas of consideration must be as broad as practicable and they must be clearly defined and identify jobs that are covered.

Qualifications -- Plans must identify qualifications standards which will apply, and they must be applied systematically and uniformly to all candidates.

Evaluation -- Evaluation methods to be used in rating and ranking candidates must be reasonable, valid for the positions, and applied fairly and equitably.

Nondiscrimination -- Selections must be made without discrimination for any nonmerit reason such as race, religion, sex, or politics.

Complaints -- Agency plans must provide for consideration of employee protests concerning failure to observe promotion guidelines and plans.

Release -- Employees selected for promotion must be released from the positions they occupy.

Some employees think that promotions should be made strictly on the basis of seniority, and many agency plans do give length of service in a job heavy weight among factors of consideration in filling certain kinds of positions. But length of service should not be the sole factor considered, for the purpose of promotion is not to reward, but to select the candidate best qualified for the job to be filled. That person may well be junior in service but superior in ability.

By the same token, satisfactory or even outstanding performance in a subordinate position does not guarantee successful performance of a similar but more responsible job. This is the reason that performance tests, appraisals of potential, and other evaluation techniques are employed to rate and rank candidates for more responsible assignments.

A REMINDER

Friday, March 6 is the deadline for obtaining a free Federal Voting Registration Receipt to vote in elections for federal offices. The place to obtain the receipt is in the county clerk's office in your county. If you already have a state poll tax receipt or an exemption certificate the federal receipt is not necessary.

Two MSC Officials Speak In Ft. Worth To NMA Group

Two NASA Manned Spacecraft Center officials--Wesley Hjernevik, assistant director for Administration, and Charles W. Mathews, Gemini Program manager--were featured speakers at the co-sponsored conference of the National Management Association and General Dynamics/Fort Worth Management Club last Saturday, in the Grand Ballroom of the Hotel Texas in Fort Worth.

Hjernevik spoke on "The Nation's Manned Space Program and Its Management." Mathews spoke on "Management Aspects of The Gemini Program."



UF MERIT AWARD -- The Merit Award to the employees of the Manned Spacecraft Center for their outstanding achievements during the 1964 United Fund campaign on behalf of 67 community service organizations was accepted this past week for the employees by Donald T. Gregory (left), technical assistant to the MSC director. Wayne R. Stratton, campaign division director from the Houston and Harris County United Fund made the presentation.

EAA Is Helping Organize Recreation Groups

The MSC Employee Activities Association is assisting in the organization

Outdoor Sportsmen Form Association For Small Groups

The NASA Sportsmen Association was organized January 28 to group together small outdoor sporting groups into a recognized organization under the auspices of the MSC Employees Activities Association.

Officers in the new association are David Bell, president; Gordon Rysavy, vice president; Daryl Kendrick, secretary; and Jerry Vick, treasurer. The group meets once a month with the next meeting scheduled for 7 p.m., March 9, in Bldg. 105, EAFB.

of recreation groups for MSC employees and their families.

A list of proposed activities and individuals to contact follow: camera, Robert Jones, HU 3-7695; music and folksongs, Ken Cashion, HU 3-7677; archery, Burt Cour-Palais, HU 3-7602; flying, Bill Kuykendall, Ext. 6317; chess, Maynard Weidmann, HU 3-2131; duplicate bridge, Larue Burbank, Ext. 3311; party bridge, Stig Ekeroot, Ext. 4216; water skiing and scuba diving, Walley Graves, HU 3-5411 or Hugh Scott, HU 3-2158; dancing, Harold Toy, Ext. 2463; language study, Merv Hughes, Ext. 6331; ham radio, Lee Ruetz, Ext. 3731; great books, Earl Rubenstein, HU 3-5141; pistol shooting, Gordon Rysavy, HU 3-7795; skeet

shooting, Hersh Jamison, HU 3-7461; fishing, Robert Villemarette, HU 3-7716; sailing, Jerry Grayson, HU 3-7796; and for other sports contact David Bell, HU 3-7797.

Three Here Earn Inventions Board Incentive Awards

Three members of the Manned Spacecraft Center have received cash incentive awards from the U.S. Inventions and Contributions Board for inventions which they developed.

Receiving awards were Richard B. Erb and Kenneth C. Weston for their heat shield invention, and Gary Woods for his electrocardiogram (EKG) simulator invention.



20-YEAR AWARDS -- Christopher C. Kraft Jr., assistant director for Flight Operations (second from left), presented 20-year awards recently for federal service to: (l. to r.) John J. Liddell, Frank Gammon and Paul H. Kloetzer.



WEEKLY MEETING - Engineers from the Ft. Worth District Office sometimes participate in the weekly meeting between Corps and NASA construction personnel. James Creel, chief of Systems and Acceptance Section of the Facilities Division is second from the right.

Construction At Clear Lake Site

contract that has been awarded; construction of 13 buildings which will house the majority of NASA employees and technicians. Most of these buildings will be occupied within the next few weeks.

Probably the most interesting and complex project underway at the present time is the Space Environment Simulation Laboratory. Three general contractors are at work on the building and the huge stainless steel vacuum chambers--all in a relatively small area. The milling of the door and the door frame to Chamber A is being done on the Site with two crews working 20 hours a day to grind the surfaces and the O-ring recess for the doorway to a mirror finish.

The 300-foot crane towering over the project was tested to near-capacity when the 97-ton doorway was lifted and swung into place on January 17.

Other projects under construction are the Thermochemical Test Facility and

the Flight Acceleration Facility. Contracts were awarded for construction of the Mission Simulation and Training Facility and additional Center Support facilities in December.

Bids were opened in late February for the Vibration and Acoustic Test Facility, and an extension to the Spacecraft Research Laboratory. With other facilities on the drawing boards at the present time, construction on the Spacecraft Center will continue for some time to come.

Although NASA personnel are not directly responsible for contractual administration, the Facilities Division under Leo T. Zbanek, is responsible for the funding, design criteria, general surveillance, and final acceptance.

The staff of the Site Construction Office, under John Ross and James Creel, meets with Corps management every Wednesday to discuss modifications, design adaption to

construction, and many other everyday problems and coordination matters which may arise during the week. A progress report (PERT) meeting is also held on Monday morning in which a joint CE-MSC group discusses construction progress and makes up a report for the management of NASA and the Corps.

A tradition of the Corps has been its insistence upon quality construction aligned with reasonable costs and schedules. Field inspectors pay close attention to detail, and it can be said with assurance that the material and workmanship going into the construction of the Manned Spacecraft Center has met or surpassed the required specifications.

The Site is frequently visited by engineering specialists from the Corps of Engineers Fort Worth District Office and the Southwestern Division Office at Dallas. The Corps' top brass from the Chief of Engineers Office also inspect the construction progress at intervals.

Corps workers, both professional and administrative, are dedicated, conscientious career employees who are justifiably proud of their contribution to the space program. They represent many specialized skills, ranging from experts in concrete and asphalt road construction to specialists in radiographic welding inspection. Professional engineers' certificates are prevalent and a great many colleges and universities are represented; but the best measure of the individual's ability is, as always, his knowledge and skill acquired in the hard school of experience--and the Corps has many such graduates.



SPREADING ASPHALT - Construction Engineer R. W. Anstead pays close attention to asphalt operations. Roads and parking lots on the MSC are designed to drain quickly in the heaviest rains.



MCC PLANS - Engineer Charles Lee looks over plans in the Mission Control Center with C. G. Lebow, project superintendent for the Ets-Hokin Corp.



FREQUENT VISITOR - Bob Jones, chief of Engineering Division, Don Mills, chief of Construction, and Lt. Col. Wayne A. Blair, area engineer, are shown with Brig. Gen. T. J. Hayes, special assistant to the Chief of Engineers for NASA Support. General Hayes is a frequent visitor to the site and is the top Coordinator between NASA and the Corps.

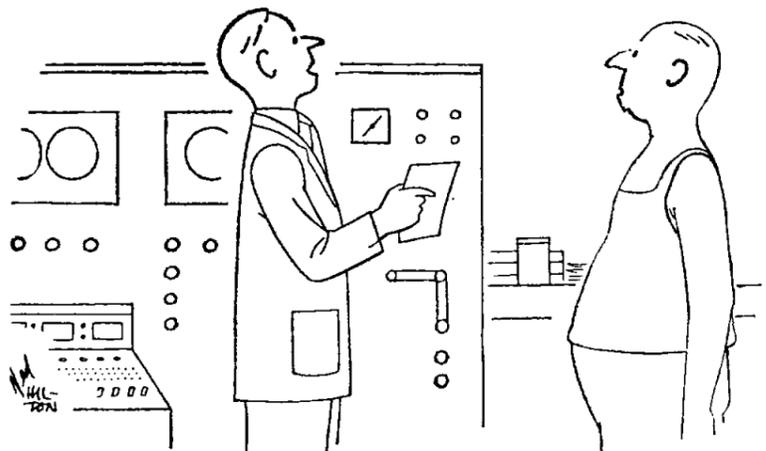


WORK DISCUSSION - Construction representative W. L. Phillips discusses site work on the Flight Acceleration Facility with Jim Park, project superintendent for Bellows-Kiewit. Phillips supervised the construction of the Technical Services Office and Shop in the background.

The SPACE NEWS ROUNDUP, an official publication of the Manned Spacecraft Center, National Aeronautics and Space Administration, Houston, Texas, is published for MSC personnel by the Public Affairs Office.

Director Robert R. Gilruth
 Public Affairs Officer Paul Haney
 Chief, News Bureau Ben Gillespie
 Editor Milton E. Reim

On The Lighter Side



"You may prefer to seek another opinion; the computer says you're pregnant."

Things To Think About

Since the day when a group of men first lived together, there has been something that we call law, a set of rules by which we try to live. First there was tribal law and from this first beginning developed the great body of law by which we live today. With more and more satellites being placed in orbit about the earth, with the possibility of travel in space, it is inevitable that man, in years to come, must formulate space law.

It is likely that space law will conform in great part to the law of the sea - free for the use of everyone, belonging to no one. But there is the question of how high into the air national sovereignty may extend. If enough satellites are put up, some sort of a law of the road must be established. It may be necessary to appoint somebody that would have jurisdiction over orbital activities.

Another question which has been raised is whether any nation can lay claim to another body in the solar system, the moon, for example. How do you lay claim to such a body? Drop or plant a flag on it? Land and issue a proclamation of possession? Or would it be necessary to colonize it? May it be that it would be wiser to allow no nation to establish any claim to any part of another body in the solar system? And, if so, who would enforce such a law?

Perhaps you can think of other space laws that may be needed. Perhaps you can think of better answers to those questions which already have been raised.

Reprinted courtesy Minneapolis Tribune

Kraft

(Continued from page 1)

Task Group in 1958. As flight director for all the past manned U. S. spaceflights, Kraft exercised the critical responsibilities of controlling the flights from lift-off to landing of the spacecraft in the recovery area.

During non-mission periods, Kraft exercises direct management responsi-

bilities for the conceptual development and establishment of systems requirements for future spaceflights.

Previous awards bestowed on Kraft include the the NASA Distinguished Service Medal which he was presented on May 21, 1963, by President Kennedy. He was also selected as one of the 100 outstanding young leaders of the nation by the editors of Life magazine in 1962.

WELCOME ABOARD

Sixty-three new employees reported for duty at Manned Spacecraft Center during the period from January 23 through February 16. Of these, nine were assigned to MSC-Florida Operations at Cape Kennedy, three were assigned to White Sands Missile Range and one assigned to Gemini Program Office, St. Louis. The remaining 50 were assigned to Houston.

ADVANCED SPACECRAFT TECHNOLOGY DIVISION: Alan Maxwell, Arthur D. White, Don C. Lawrence II, Jerry R. Wood and Patrick D. Crawford.

RESIDENT GEMINI PROGRAM OFFICE (Florida Operations): Elaine A. Welsh.

GEMINI PROGRAM OFFICE (St. Louis): Richard L. Lauf.

GEMINI PROGRAM OFFICE (Houston): Nell E. Standefer.

MSC-FLORIDA OPERATIONS: Mary J. Short, Robert L. Phelps, Mary E. Gustovich, Florence V. Willmot, Leon M. Pringle, James P. Ledet, J. C. Talley, and Violet M. Coble (assigned to St. Louis).

WHITE SANDS MISSILE RANGE (White Sands, N. M.): Karel D. Lee, Robert D. Hubbard and Lloyd A. Eller.

SECURITY DIVISION: Warren P. Nobles.

PHOTOGRAPHIC DIVISION: Bobby V. Gray.

FLIGHT CONTROL DIVISION:

Proposals Asked For Low-Speed Research Gliders

The National Aeronautics and Space Administration Flight Research Center, Edwards, Calif., has asked 26 firms to submit proposals for construction of low-speed lifting-body gliders for use in investigating problems of piloting advanced spacecraft during landing.

NASA will furnish the contractor with information obtained through lifting-body research experience on the M-2 concept at Ames and the HL-10 at Langley.

Both vehicles will be studied in the 40-by-80-foot wind tunnel at Ames. After thorough testing and evaluation, the vehicles will be investigated in flight at Edwards. They will be carried aloft by a B-52 carrier--in a manner similar to the X-15--and released at 45,000 feet. The pilot will then glide the craft into a landing at Rogers Dry Lake at Edwards.

Flight tests are expected to begin in 1965.

MSC PERSONALITY

Joseph S. Algranti Manages MSC's Aircraft Activities

The 29 astronauts at the Manned Spacecraft Center depend on Joseph S. Algranti for safe and flyable aircraft when they get in their flying time or need to make a "flying trip" on business.

Algranti is chief of the Aircraft Operations Office and is responsible for managing the operation and monitoring the maintenance of astronaut aircraft and any transport aircraft which may be assigned to MSC.

He also coordinates astronaut proficiency flying and establishes the MSC flight examination system and issues NASA pilot certifi-

SION: Orlando O. Fernandez, Betty L. Defferari, Donald E. Holkan, and Charles R. Edwards.

CREW SYSTEMS DIVISION: Joseph W. Van Dyke, Leo E. Orr Jr., William V. Judy, James L. Beman and Marius M. Hubbell Jr.

INSTRUMENTATION AND ELECTRONIC SYSTEMS DIVISION: Earl W. Tiedt and Donald A. Reiss. STRUCTURES AND MECHANICS DIVISION: James A. Shadden, Willard L. Castner and Wayne H. Brewer.

OFFICE OF ADMINISTRATIVE SERVICES: Adele C. Posner and George J. Buehler Jr.

COMPUTATION AND ANALYSIS DIVISION: Ronald E. Briggs.

GROUND SYSTEMS PROJECT OFFICE: Robert W. Moorehead.

GUIDANCE AND CONTROL DIVISION: Max Ray Mills, Mary Alice Barnes and Dorothy B. Baker.

TECHNICAL SERVICES DIVISION: William J. Holton, Carol M. Wright, William Riddlehoover, Charles W. Ragan, Richard M. Gilley, Johnny B. Clark, and Norman E. Boles.

PROCUREMENT AND CONTRACTS DIVISION: Naomi E. Davis, William R. Lynch, John B. Alldredge, Viola E. Brown and Whitson H. Clements Jr.

MANAGEMENT ANALYSIS DIVISION: Judith S. Wyatt.

APOLLO SPACECRAFT PROGRAM OFFICE: Hazel G. Hamlon.

OFFICE OF ASSISTANT DIRECTOR FOR FLIGHT OPERATIONS: Dorothy A. Gaston.

PROGRAM ANALYSIS AND RESOURCES MANAGEMENT DIVISION: Vivian G. Walker and Mary C. Decherd.

MISSION ANALYSIS DIVISION: Gene W. Ricks and Paul M. Mitchell.

LEGAL OFFICE: C. Sue Haworth.

PROPULSION AND ENERGY SYSTEMS DIVISION: Robert K. Allgeier Jr.

Other duties include providing pilot input in connection with the astronaut simulator programs to give realistic design to hardware equipment as well as

participating in dynamic simulation as a test subject prior to astronaut use to establish safe limits.



JOSEPH S. ALGRANTI

participating in dynamic simulation as a test subject prior to astronaut use to establish safe limits.

Algranti also pilots MSC aircraft performing high-altitude flight tests pertaining to spacecraft equipment.

He joined MSC in September, 1962 as chief, Aircraft Operations Group.

Prior to this he had been with the Lewis Research Center since 1951 as a pilot participating in numerous experimental flight and development tests. The tests included crashfire research, aircraft icing, high altitude turbojet operation and other early jet experiments.

He has authored and co-authored several reports on various fuel systems used with jet aircraft and reports pertaining to aerodynamics.

Born in New York City, he attended high school in Durham, N. C. and was graduated from the University of North Carolina with a BS degree in physics.

He has served in the U. S. Navy and is presently a commander in the U. S. Naval Reserve.

Algranti is a member of the American Institute of Aeronautics and Astronautics and the Aircraft Owners and Pilots Association.

Married to the former Annabelle Corpus, of Elizabeth, Pa., the couple has three children, Donald 15, Sam 8, and Deborah 6, and reside in Seabrook, Texas.

His hobbies include model airplanes, photography, golf and fishing when time permits.

Saturn SA-5 Camera Capsules Use Fibre Optics In First Space Role

For the first time on any space launch, camera capsules were linked to fibre optic cables, each cable consisting of 690,000 strands of glass, and via these fibre optics four cameras photographed the sloshing action and consumption rate of the propellant inside the fuel tanks during the Saturn SA-5 lift-off.

Agitation or movement of fuel and the degree of fuel utilization at various stages

of launch grow in importance as vehicle sizes and fuel amounts increase.

Eight recoverable camera capsules, developed and manufactured by Cook Electric Company's Tech-Center Division, Morton Grove, Ill., were aboard the SA-5 at launch -- four capsules viewing the outside of the Saturn vehicle and four the inside.

The strands of glass cable, or fibre optics, installed inside the tanks en-

abled the cameras to photograph the fuel although the cameras were outside the tanks.

The Cook camera capsules were located in pairs 90 degrees apart around the perimeter of the Saturn first stage, at the top of the stage.

Each cylindrical camera capsule on the Saturn SA-5 was 281 inches long and 7 3/4 inches in diameter and housed 16-mm. camera and capsule recovery system. The cameras operating at 400 frames per second, were equipped with 110-degree wide angle lens and photographed through thick protective quartz windows.

The four cameras outside the vehicle recorded blow-off or opening of panels from the Saturn vehicle's interstage section, ignition of ullage rockets, physical separation of S-1 booster from S-4 stage, ignition of retrorockets, ignition of S-4 stage, and vehicle behavior after stage separations.

The camera capsules, after ejection from the Saturn vehicle, re-entered the atmosphere at speeds in excess of Mach 10.

The Cook recovery system utilized to return the capsules consists of stabilization and deceleration flaps and high-velocity paraloons which bring the capsules to the water, then float them for recovery. The system also includes radio transmitter, chaff, dye markers, and flashing beacon to aid recovery.

The Cook capsule system has been used earlier on Atlas and Titan flights -- but never before to photograph such an extensive range of information or in conjunction with fibre optics.



RECOVERABLE CAMERA - Major components of Cook recoverable camera capsule system, similar to those used to take and then recover the films of Saturn SA-5 staging during launch, are shown in this photo of disassembled capsule. Shown are (lower left) camera unit, with quartz optical window; (lower right) stabilization and deceleration flaps which reduce speed from 7,000 mph at re-entry; and (center) aluminum body of capsule with paraloon and antenna opened.

Molecular Bonding Process Used On Apollo Cold-Plates

At the Downey, Calif. Division of the Space and Information Systems of North American Aviation, continuing research has resulted in important advances in molecular bonding aluminum sheets to plate-stock, for heat-exchange "cold-plates" on the Apollo program.

Diffusion bonding is performed in an inert atmosphere under stringent controls. Some phases of the

operation are performed under conditions comparable to hospital environments, because the presence of any foreign particles prevent total bonding.

Stainless steel auxiliary glide sheets are placed on both sides of the aluminum sandwich during the bonding operation. To prevent adherence between the aluminum and stainless steel, a special wet hydrogen furnace oxidizing is being developed.



SA-5 CAMERA'S - These photo series show how pictures of recent successful staging and launch of Saturn SA-5 were taken some 70 miles high by Cook recoverable camera capsules aboard the Saturn, then brought back from space for study by NASA's Marshall Space Flight Center engineers. Sequence at left shows (top to bottom) design of capsule and ejection tube and positioning of one pair of the eight Cook camera capsules on the Saturn SA-5 vehicle. Sequence at right, from Marshall altitude chamber and air drop tests, shows (top to bottom) what happens as Cook camera capsules are safely brought back to Earth with vital films.

Electronic Unit To Aid Spacecraft Reentry

An electronic package about half the size of a shoebox and weighing less than eight pounds is being built to help future astronauts "fly" their spacecraft after reentry from earth orbit.

Delivery was made recently of the first production unit of a Paraglider Control Electronics (PCE) device which was developed and is being built by Honeywell's Aeronautical Division in Minneapolis under a \$710,000 contract with North American Aviation's Space and Information Systems Division, Downey, Calif.

Technical direction of the Paraglider project is provided by the Manned Spacecraft Center and the contract covers delivery of ten of the units, five engineering prototypes and five production prototypes, as well as complete test equipment for both laboratory and field

testing.

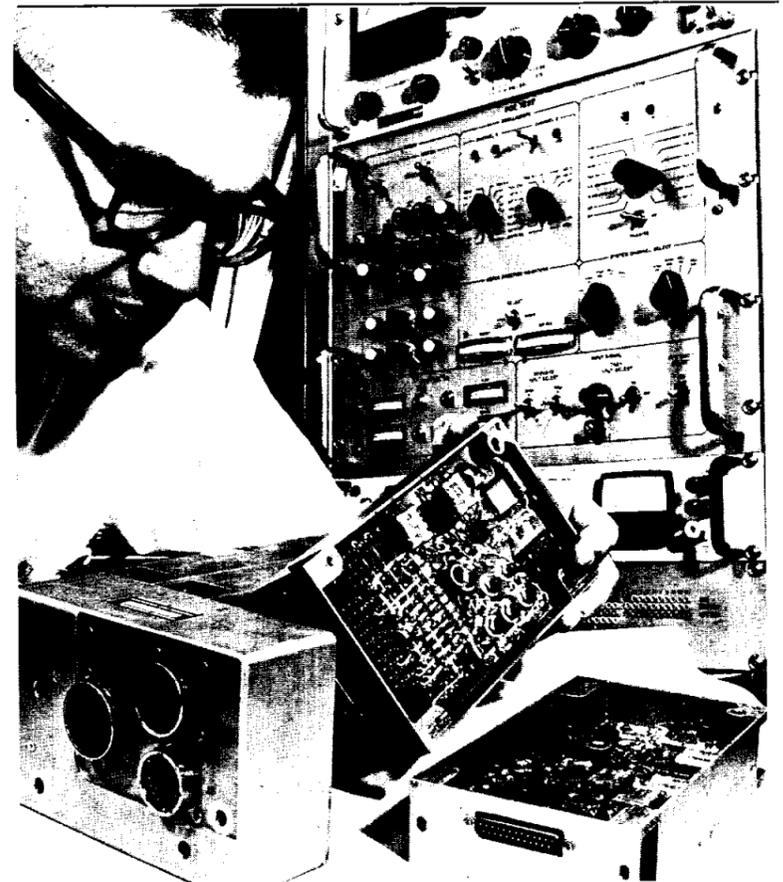
The Paraglider concept envisions suspending a spacecraft from cables in a generally horizontal position beneath an inflatable wing. The pitch and roll cables will be reeled in or out by pneumatic winches, achieving a controlled flight decent to landing.

Honeywell explained that its PCE will control the winch pneumatic motors by comparing the actual motor position and speed with command information from astronaut hand controllers. Once a command maneuver is made, the PCE stops the motor.

The PCE consists of four identical modules plugged

into an inter-connecting assembly. Two are designated as primary and secondary (redundant) pitch modules and two as primary and secondary roll modules.

The modules consist of transistorized amplifiers and switching logic which provide pulse-width-modulated electrical signals to the control valve of the pneumatic motors. With the exception of power switching stages, the electronics are essentially of welded module construction, Honeywell said, and the PCE's are designed to withstand 20g vibration and 30 g shock forces.



GEMINI PARAGLIDER CONTROL electronics developed by Honeywell will help astronauts fly spacecraft like a glider after reentry from earth-orbit. With the spacecraft suspended by cables from a Paraglider "wing", the control electronics package will use signals relayed from astronaut hand controllers to command operation of the pneumatic winch motors which reel the cables in or out.

Space News
ROUNDUP!
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Manned Orbiting Space Station Possible By 1968, NASA Told

An American scientific space station with 24 or more crew members aboard can be orbiting the earth in 1968, Lockheed-California Company engineers reported to the National Aeronautics and Space Administration.

Total cost of the Lockheed-recommended space station program--including logistics spacecraft and ground support--for five years operation was estimated at \$2.6 billion, engineers noted in the operations and logistics study performed for NASA's Manned Spacecraft Center.

One Saturn V booster, now under development for the Apollo moon landing program, would be employed to rocket the station into orbit.

Launch would take place at Cape Kennedy.

Normal landing of the logistics spacecraft within the United States is feasible.

In their six-month study, Lockheed engineers con-

sidered both zero-gravity stations and stations rotated about their axes to provide artificial gravity by means of centrifugal force.

No choice was made between the two types because it is not yet known how long man can perform effectively under non-gravity conditions. Although a zero-gravity station is more economical, the dollar savings would be wiped out if shorter duty tours and thus additional crew rotation shuttle flights were required.

In placing the approximately 125-ton space station in operation, Lockheed engineers recommended this procedure:

Launch the space station unmanned into orbit. Launch a manned logistics

vehicle to rendezvous and dock at the station. Board the space station, and activate its subsystems.

Lockheed engineers also recommend:

1. Space stations altitude of 260 nautical miles.

2. Orbit inclination of 29.5 degrees (highest latitude of the station above and below the earth's equator), similar to that of Project Mercury flights.

3. Selection of 12-man logistics spacecraft to exchange station crews and transport supplies between earth and orbit.

Initial crew of 24 would probably consist of astronauts, engineers, biomedical specialists, and other scientists.

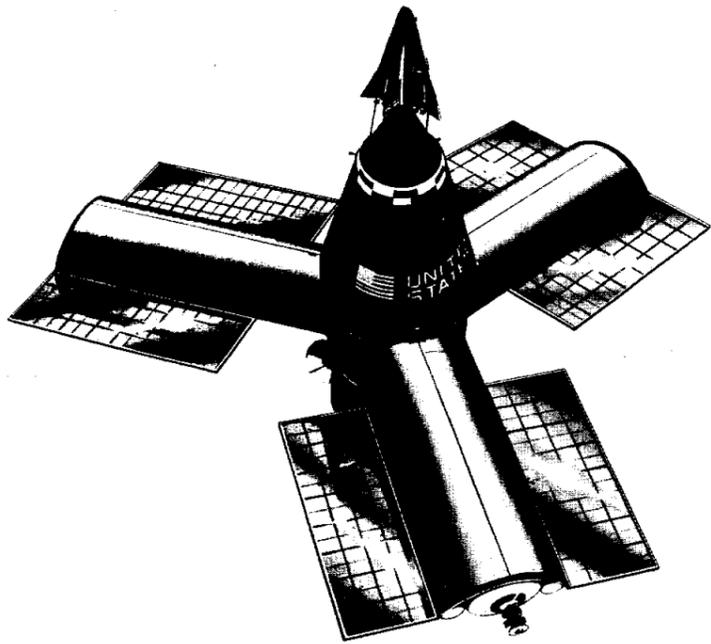
A six-month average tour of duty for crew members was suggested.

A logistics spacecraft flight would be scheduled every three months for crew rotation and to replenish supplies.

The 24-man space station would use up to 70,000 pounds of supplies per year. This would include 555 pounds of food and 183 pounds of oxygen per man, plus propellants, spare parts and other items.

A regeneration system aboard the station would reduce the amount of oxygen needed from earth.

The space station would be used during its five-year life to carry out basic and applied scientific research programs, engineering and development qualification tests, and training and support functions for future interplanetary voyages and other space station operations.



ARTIST'S CONCEPT of a three-radial, 24-man space station, called the Large Orbiting Research Laboratory, now under study by engineers at the NASA Manned Spacecraft Center. Rotating at four RPM, it could provide up to four-tenths the effect of earth's gravity inside its 18 rooms (six in each "spoke"). The large "hangar deck" at the center would be used also to store as much as a year's supply of necessities, and a counter-rotating zero-gravity chamber beneath the hangar would provide laboratories for the study of prolonged weightlessness. Crew rotation and resupply would be accomplished by re-entry vehicles, such as the one attached atop the hangar area.

Portable Space 'Water Well' To Supply Astronaut Drinks

When American astronauts depart for the moon later this decade, chances are they will carry no drinking water aboard their Apollo spacecraft.

That's because engineers at the NASA Manned Spacecraft Center here plan to install a system aboard Apollo to produce all the water the three spacemen will need.

Called a "fuel cell," the ingenious system is designed to replace conventional batteries in spacecraft which must remain in space beyond the useful life span of the battery.

Fuel cells convert chemical energy into electrical energy, using hydrogen and oxygen gasses. These gasses are fed into separate electrodes in a chamber, causing an electro-chemical reaction.

And this reaction, which produces enough power to operate all the spacecraft's electronic equipment, results in quantities of water as a byproduct.

Engineers expect fuel cells in the Apollo to provide about 60 gallons of potable water during a 14-day journey--to the moon and back.

Not only are fuel cells six times lighter than batteries of equivalent power, but they eliminate the need for generators, and do away with the requirement for

storing large quantities of water aboard the spacecraft.

A miracle of modern science?

Not quite. The first recorded work on fuel cells was done by England's Sir William Grove more than 100 years ago.

MSC Asks Performance Proposals For Lunar Survey Experiments

The NASA Manned Spacecraft Center has asked for proposals from aerospace companies for a study on how to perform lunar survey experiments.

Proposals, to be submitted by March 5, 1964, call for maximum use of equipment presently planned for the Lunar Excursion Module. This includes an inertial measurement unit, a guidance computer, a space sextant, scanning telescope, coupling unit and electronic packages.

Called selenodetic measurements study, it will examine the use of applied mathematics to determine by observation and measurement the exact position of points and areas of large portions of the moon surface.

The study seeks answers on how to perform lunar

Apollo Panel Holes Cut By Dry-Drilling

At the Space and Information Systems Division of North American Aviation, Downey, Calif., holes are being cut through brazed honeycomb panels without the cutting-tool touching the material, the "fluid" for cooling and removing the cuttings.

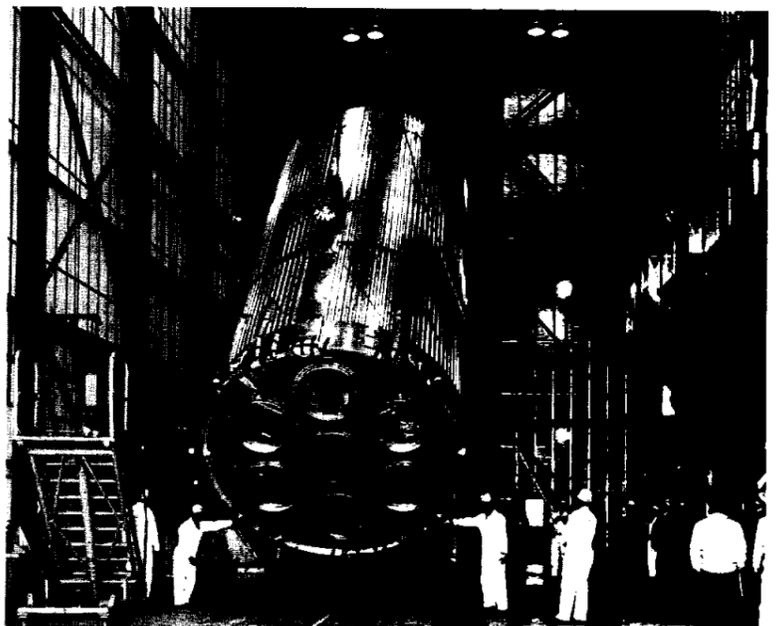
This technique was developed by Manufacturing Engineering because conventional hole-cutting methods (drills, fly-cutters, hole-saws, etc.) tore the edges or crushed the honeycomb.

Dry-drilling by EDM (Electrical Discharge Machining) uses an electrode having the basic configuration of the hole. As the electrode approaches the metal a spark arcs between the electrode and the part,

similar to the arcing of a spark plug. This arc removes a microscopic particle of metal.

By advancing the arcing rate to high-frequency, continuous metal-removal is achieved. There is never physical contact between the cutter and the metal.

Water was originally used to remove the disintegrating particles, but moisture entrapped in the panels constituted potential zones of detrimental corrosion. To date no totally reliable method has been developed to guarantee 100% removal of moisture.



LITTLE JOE II AT WSMR - The Little Joe II launch vehicle for the scheduled April launch of the Apollo Boilerplate 12, is shown in the Vehicle Assembly Building at the White Sands Missile Range in New Mexico. The vehicle and Apollo boilerplate will be checked out and assembled in this building prior to the test flight.